ONTARIO MINISTRY OF ENVIRONMENT
3693600023343

OPERATING SUMMARY

1974

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CITY OF

CAMBRIDGE (GALT)

WATER POLLUTION CONTROL PLANT

TD
367
.A56
C364
1974
MOE

TD
367
.A56
C364
1974

Cambridge (Galt) : water pollution control plant.

81519

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, WEST-CENTRAL REGION
C. Macfarlane

MANAGER, UTILITY OPERATIONS
B. Hansler

CAMBRIDGE (GALT)

WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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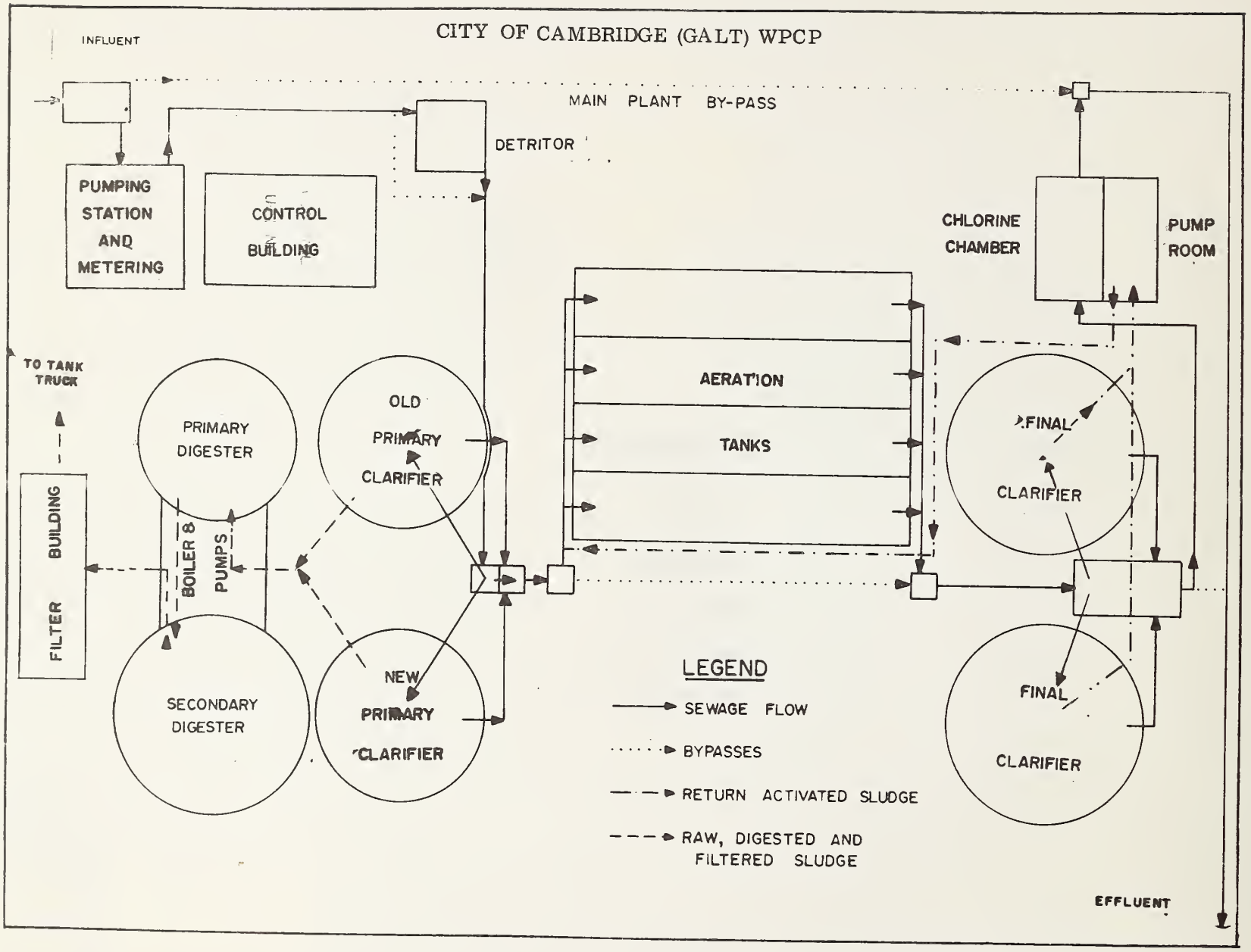

CITY OF CAMBRIDGE (GALT) WPCP
INFLUENT
MAIN PLANT BY-PASS
DETRITOR
PUMPING STATION AND METERING
CONTROL BUILDING
CHLORINE CHAMBER
PUMP ROOM
TO TANK TRUCK
AERATION TANKS
PRIMARY DIGESTER
OLD PRIMARY CLARIFIER
FINAL CLARIFIER
FILTER BUILDING
BOILER & PUMPS
SECONDARY DIGESTER
NEW PRIMARY CLARIFIER
FINAL CLARIFIER
LEGEND
SEWAGE FLOW
BYPASSES
RETURN ACTIVATED SLUDGE
RAW, DIGESTED AND FILTERED SLUDGE
EFFLUENT

DESIGN DATA

PROJECT	City of Cambridge (Galt) WPCP
PROJECT NO.	1-0099-67
TREATMENT	Activated Sludge
DESIGN FLOW	8.5 mgd
DESIGN POPULATION	34,000
BOD - Raw Sewage	250 mg/l
- Removal	90%
SS - Raw Sewage	250 mg/l
- Removal	90%

PRIMARY TREATMENT

Comminution

Type: C.P. Barminutor
Size: One Model C (36")

Raw Sewage Pumps

Type: Babcock-Wilcox
Size: Three 3500 gpm @ 30' tdh

Grit Removal

Type: Eimco Detritor
Size: One 18' x 18' x 2' deep
(4,000 gal)
Retention: 1.15 min

Primary Sedimentation

Type: (a) Dorr (old cl.)
(b) Eimco (new cl.)
Size: Two 60' dia x 9' swd
50,600 cu ft or 315,000 gal)
Retention: 1.5 hours
Loading: Surface, 884 gal/ft^2/day
Weir, 13,250 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Mechanical aeration
Single pass (5-cell)
Size: Four 150' x 30' x 13.7'
(234,000 cu ft or 1.46 mil gal)
Retention: 7.0 hours

Aerators

- Twenty Ames-Crosta

Secondary Sedimentation

Type: Eimco
Size: Two 75' dia x 10' swd
(88,400 cu ft or 550,000 gal)
Retention: 2.64 hours
Loading: Surface, 566 gal/ft^2/day
Weir, 10,600 gal/ft/day

CHLORINATION

- One F & P Automatic

Chlorine Contact Chamber

Size: One 49.25' x 21.5' x 7.25'
(46,000 gal)
Retention: 13.25 min

OUTFALL

- to Grand River

SLUDGE HANDLING

Digestion System

Type: Two-stage

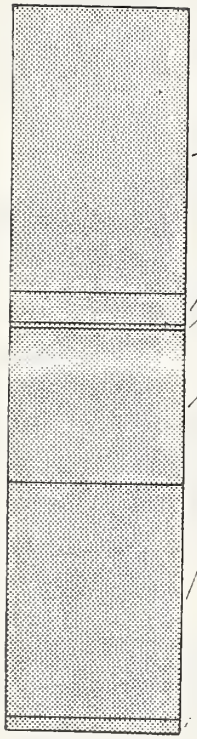
Primary --
Type: Eimco draft tube mixers (2) on concrete roof
Size: One 50' dia x 20' swd (30,300 cu ft or 189,000 gal)

Secondary --
Size: One 70' dia x 20' swd (77,000 cu ft or 480,000 gal)

Vacuum Filter

Type: Eimco (cloth)
Size: One, 380 sq ft

ANNUAL COSTS



1974 OPERATING COSTS

SALARIES & WAGES	38%
EMPLOYEE BENEFITS	4%
TRANSPORTATION & COMMUNICATIONS	1%
SERVICES	22%
SUPPLIES & EQUIPMENT	33%
AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0%
TRANSFER PAYMENTS	0%
OTHER TRANSACTIONS	2%

YEARLY OPERATING COSTS

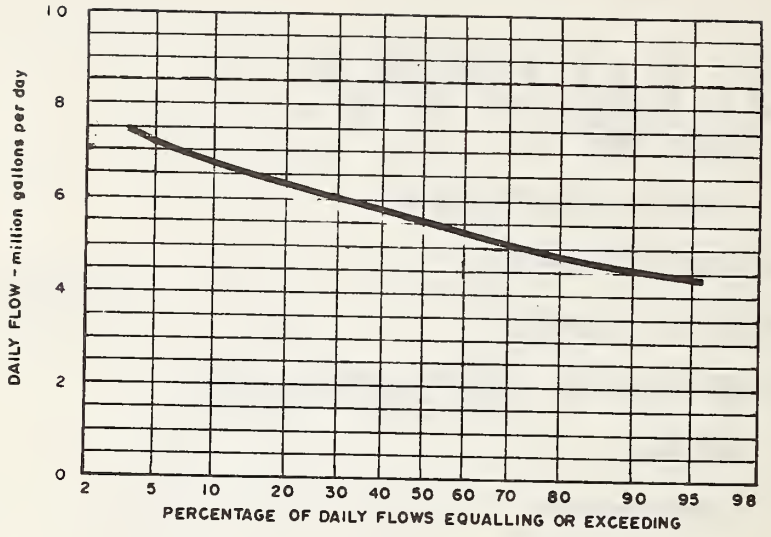
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS $/M.G.	UNIT COSTS ¢/lb BOD
1974	2046	220160	108	8

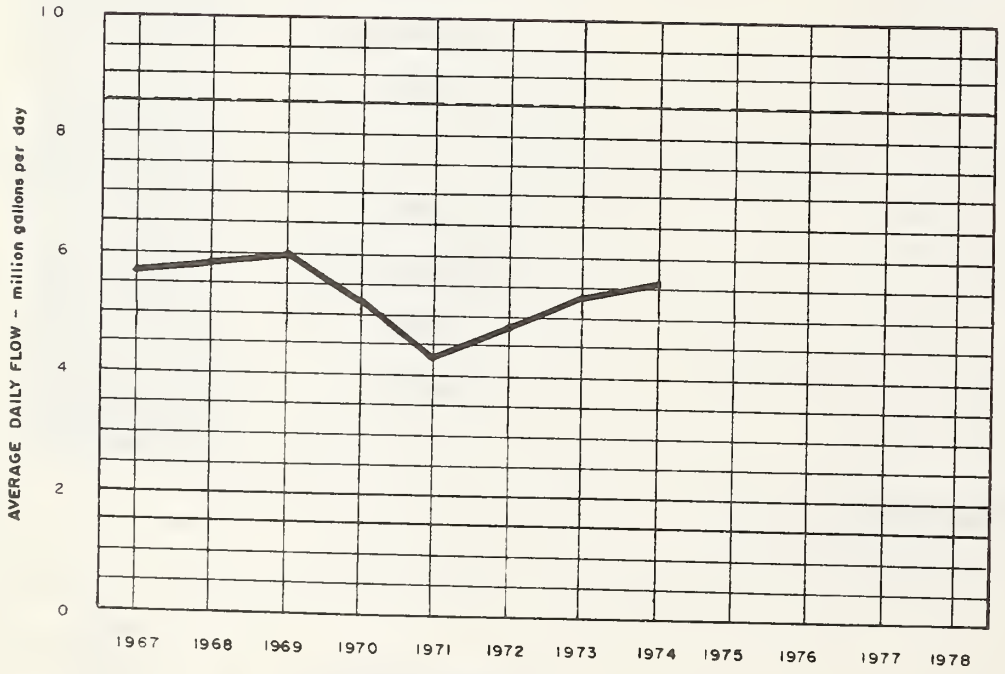
OPERATING EXPENDITURES

Regular Staff	$ 77485	$
Casual (Unclassified) Staff	5532	
TOTAL SALARIES AND WAGES		83017
TOTAL EMPLOYEE BENEFITS		8043
TOTAL TRANSPORTATION AND COMMUNICATIONS		2048
Insurance	1867	
Sludge Haulage	34629	
Repairs and Maintenance	7767	
Other Services	5065	
TOTAL SERVICES		49328
Machinery and Equipment	9170	
Chemicals	25970	
Utilities	30580	
Other Supplies and Equipment	6331	
TOTAL SUPPLIES AND EQUIPMENT		72051
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		5673
GRAND TOTAL	GRAND TOTAL	$ 220160

PROCESS DATA

FLOWS



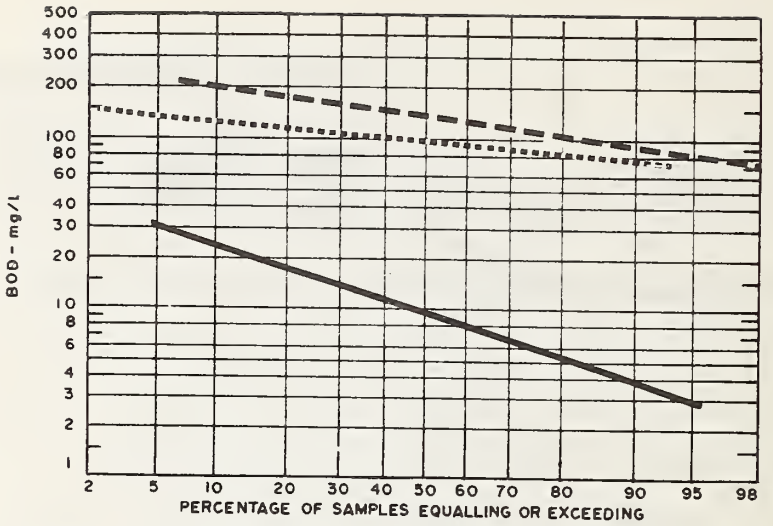


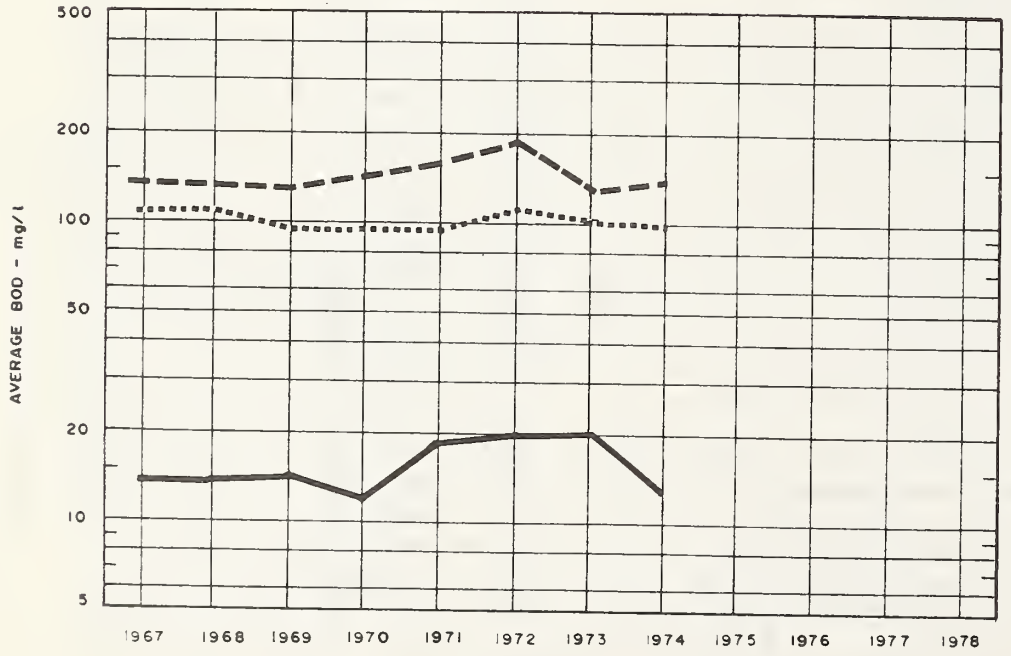
DESIGN CAPACITY _ _ _ _ _ _ _ _

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	162.4	5.24	6.69	140	13	91	206	137	23	83	185	9.3	1.3
FEB	149.1	5.32	6.80	140	6	96	200	139	6	96	198	7.6	.6
MAR	200.9	6.48	14.46	114	6	95	217	139	12	91	255	9.6	1.0
APR	182.3	6.08	7.92	125	10	92	210	130	7	95	224	7.6	1.0
MAY	171.7	5.54	6.91	130	8	94	182	120	<7	94	169	6.5	2.3
JUNE	175.2	5.84	7.02	130	11	92	208	157	12	92	254	5.5	2.3
JULY	170.4	5.50	7.01	185	13	93	293	124	11	91	192	7.9	-
AUG	171.4	5.53	8.01	175	5	97	291	160	4	97	267	7.7	.9
SEPT	165.6	5.52	6.75	132	19	86	187	146	11	92	223	7.7	.4
OCT	158.9	5.13	6.10	158	26	84	210	147	20	86	202	7.8	.4
NOV	162.0	5.40	8.21	170	26	85	233	155	47	70	175	6.4	.2
DEC	176.1	5.68	6.16	120	15	88	185	166	26	84	246	9.0	.4
TOTAL	2046.0	-	-	-	-	-	2619	-	-	-	2639	-	-
AVG.	170.5	5.61	MAXIMUM 14.46	140	12	91	218	146	17	88	220	8.0	.8
No. of Samples	-	-	-	46	48	-	-	167	213	-	-	80	73

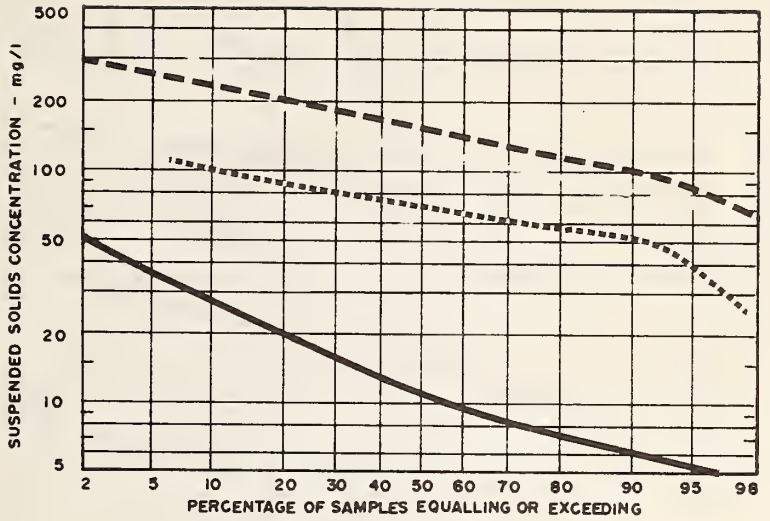
BIOCHEMICAL OXYGEN DEMAND

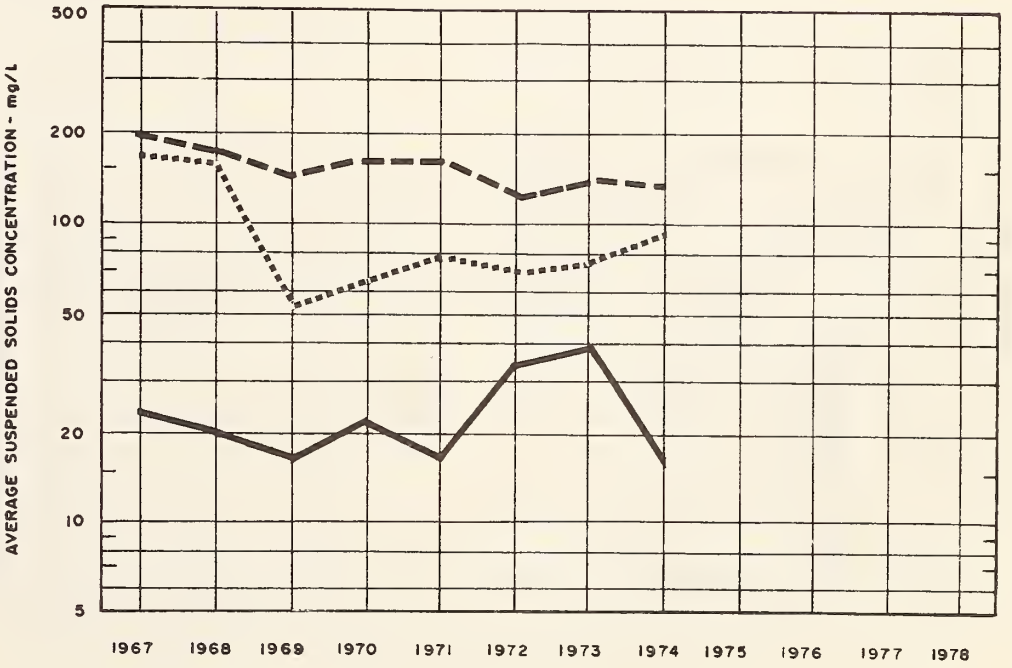




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

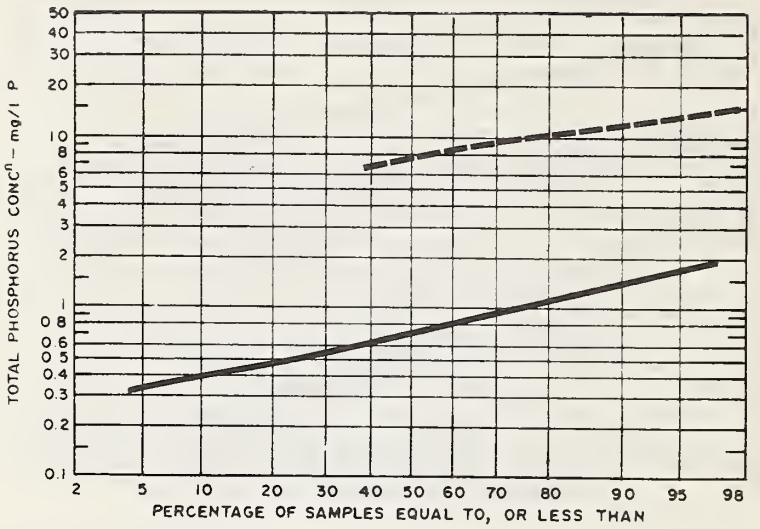
SUSPENDED SOLIDS

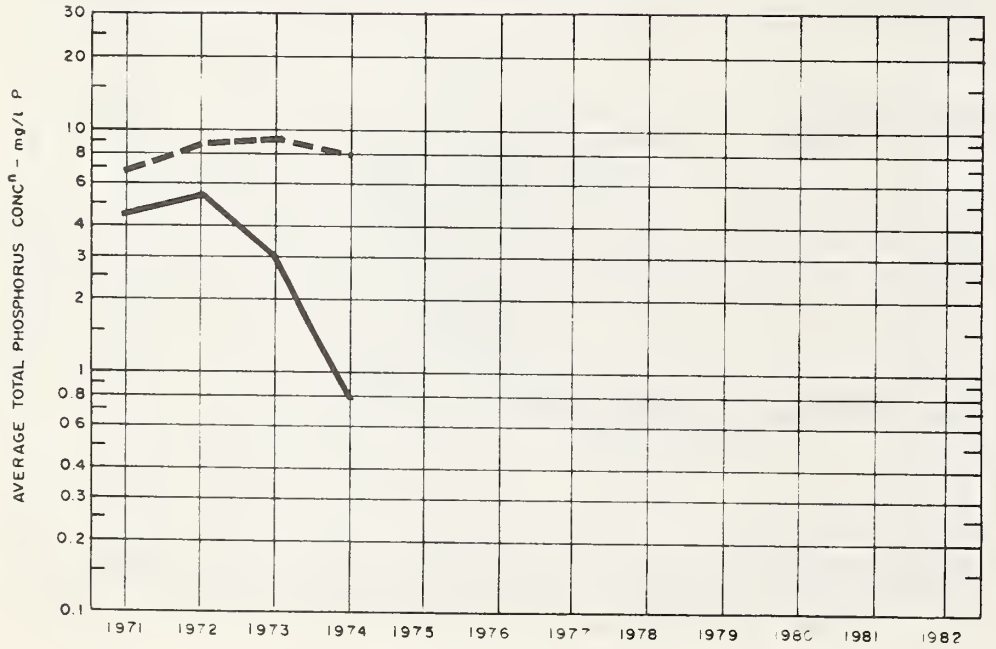




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS

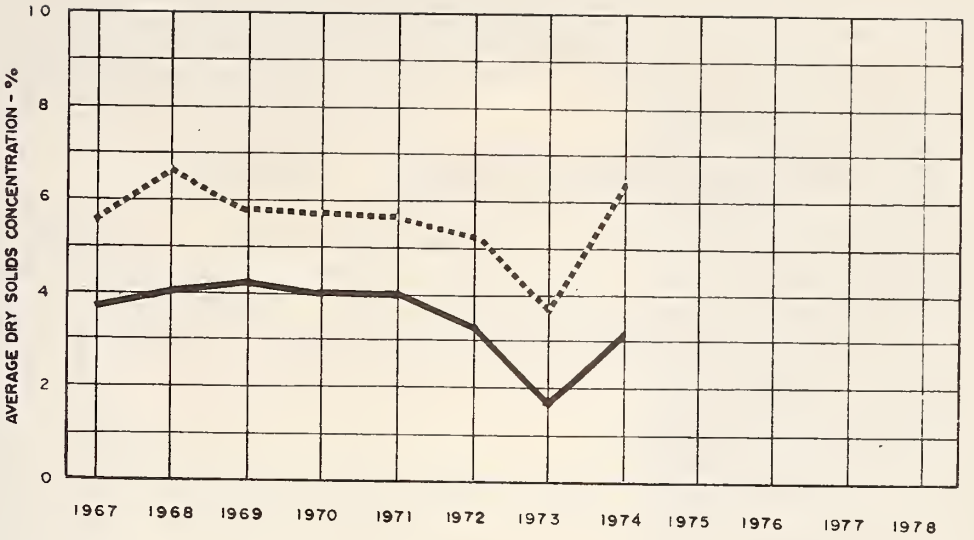


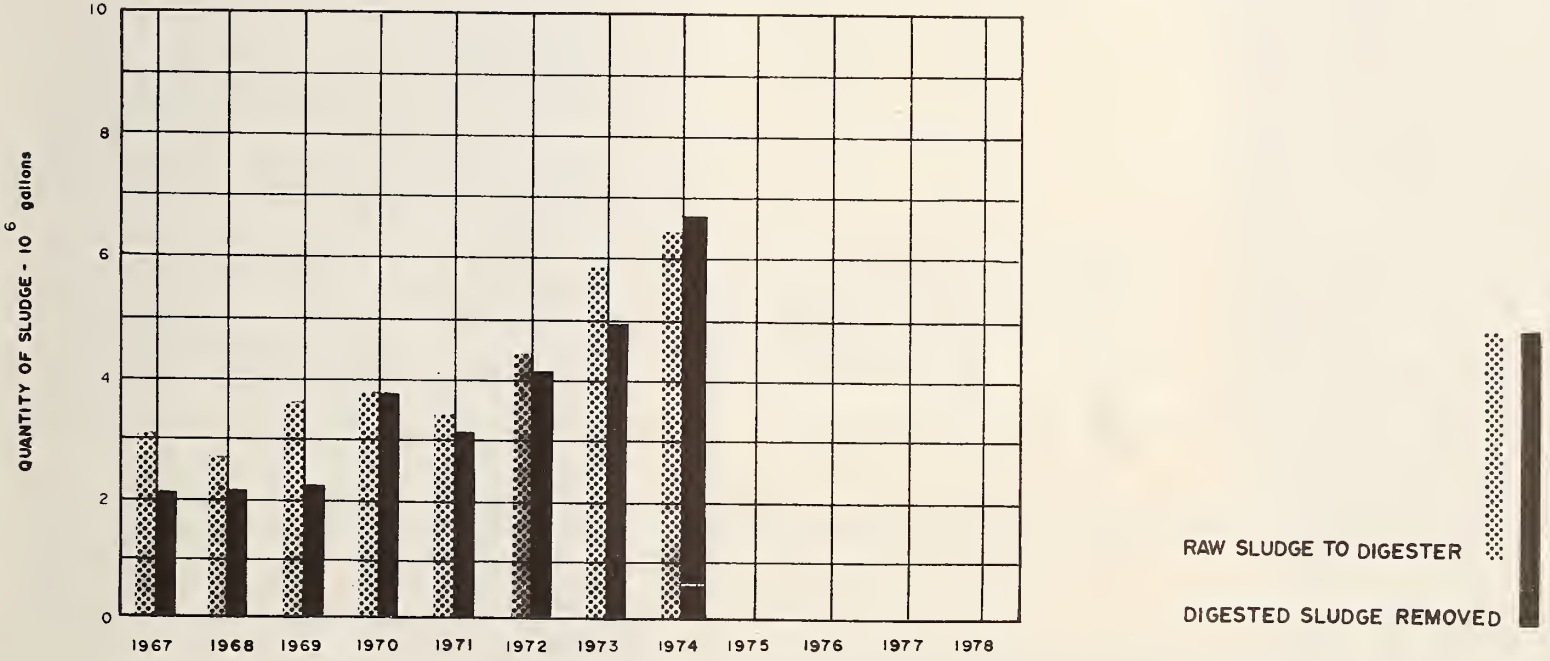


PLANT INFLUENT

PLANT EFFLUENT

DIGESTION


AVERAGE DRY SOLIDS CONCENTRATION - %
0
2
4
6
8
10
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE
DIGESTED SLUDGE


QUANTITY OF SLUDGE - 10^6 gallons
0
2
4
6
8
10
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	41	6.6	4.0	90	80	2400	.12		471	7.6	87	566	2.9	59		3362
FEB	13	5.4	3.6	102	68	3100	.11		516			664	2.3	57		3942
MAR	40	6.7	3.3	77	69	3400	.09		582			580	-	-		3445
APR	66	5.8	3.2	121	108	3500	.13		676			532	-	-		3155
MAY	78	8.1	5.4	88	67	3100	.10		500	5.5	69	470	3.9	61		2789
JUNE	-	7.1	5.3	94	70	1800	.20		375			379	-	-		2250
JULY	91	6.2	3.6	95	57	3100	.11		536			582	-	-		3456
AUG	39	6.1	3.5	93	58	3400	.10		547			552	-	-		3276
SEPT	113	5.5	3.3	90	70	3200	.10		537	5.9	68	556	3.1	53		3301
OCT	64	5.4	3.4	117	177	3500	.11		598	6.5	65	510	3.3	52		3027
NOV	63	5.4	3.3	135	90	3000	.16		567	6.3	70	428	3.1	55		2544
DEC	37	5.3	3.0	120	175	3000	.15		558	-	-	785	-	-		4658
TOTAL	645	73.6	-	-	-	-	-	-	6463	-	-	6604	-	-	-	39205
AVG.	.3 cu.ft/mil gal	6.1	3.6	99	97	3000	.12		539	6.4	72	550	3.1	56		3267

ONTARIO. MINISTRY OF THE ENVIRONMENT.
TD227/C363/G35/W38/1974/MOE
CAMBRIDGE (GALT) WATER POLLUTION CONTROL PLANT. ANNUAL OPERATING SUMMARY.
1974

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